that is not in the English language. Applicants submit that, to the contrary to the Examiner's allegation, Applicants did indeed submit an Information Disclosure Statement under 37 C.F.R. § 1.97(b), together with PTO-1449 Form, filed on April 26, 2001, in which a concise statement of relevance for each of the non-English documents listed on the Form was provided. Copies of the as-filed Information Disclosure Statement under 37 C.F.R. § 1.97(b) and the PTO-1449 Form are attached hereto for the Examiner's convenience.

REMARKS

By the present Amendment, claims 1, 2, and 4 have been amended to more appropriately define the invention. In making each of these amendments, no new matter has been added. Claims 1-18, 20, 22, and 23 are currently pending, with claims 19 and 21 withdrawn from consideration as directed to an unelected invention.

In the Office Action, the Examiner rejected claims 1-18, 20, 21, 22, and 23 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention; rejected claims 1-4, 7-14, 16, 18, 20, 22, and 23 under 35 U.S.C. § 102(e) as being anticipated by You et al. (U.S. Patent No. 6,407,009); and rejected claims 5, 6, 15, and 17 under 35 U.S.C. § 103(a) as being unpatentable over You et al. further in view of Akram et al. (U.S. Patent No. 5,925,410).

Applicants respectfully request reconsideration of the above-identified application based on the following remarks:

Rejection under 35 U.S.C. § 112, second paragraph

As discussed on page 3 of the Office Action, the Examiner rejected claims 1-18, 20, 21, 22, and 23 as being indefinite for failing to particularly point out and distinctly

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claim the subject matter which the Applicants regard as the invention. Responsive to the Examiner's comments, Applicants have amended claim 1 to further clarify the subject matter and have deleted the phrase "should not." Further, as pointed out by the Examiner, Applicants have amended claim 2 to replace "by" with "and."

Accordingly, Applicants submit that each of the claims fully comply with the requirements of 35 U.S.C. § 112, second paragraph, and request the Examiner to withdraw the rejection of claims 1-18, 20, 21, 22, and 23.

Rejection under 35 U.S.C. § 102(e)

Applicants respectfully traverse the rejection of claims 1-4, 7-14, 16, 18, 20, 22, and 23 under 35 U.S.C. § 102(e) as being anticipated by You et al.

Applicants point out that in order to properly establish that You et al. anticipates Applicants' claimed invention under 35 U.S.C. § 102(e), each and every element of the claim in issue must be found, either expressly described or under principles of inherency, in that single reference. Furthermore, "[t]he identical invention must be shown in as complete detail as is contained in the ... claim." See M.P.E.P. §2131, 8th Ed., Aug. 2001, p. 2100-69, quoting *Richardson v. Suzuki Motor Co.*, 868 F.2d 1126, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). Finally, "[t]he elements must be arranged as required by the claim." M.P.E.P. §2131, p. 2100-69. You et al. does not teach each and every element of Applicants' present invention as claimed.

Applicants' claim 1 recites a method of forming a solution film on an in-process substrate including, *inter alia*, relatively moving a in-process substrate or a dropping section, wherein ... rotational frequency w for said substrate is decreased and feed rate v for a liquid from said dropping section is increased so that the liquid dropped from

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said dropping section on said in-process substrate stays at dropped position in accordance with relative movement of said dropping section from the inner periphery of said in-process substrate toward the outer periphery.

You et al. discloses a method for dispensing precursor solutions over the surface wherein the precursor solution is pumped through a nozzle positioned over the wafer which is rotated at the same time as the nozzle is moved between the edge of the wafer and the wafer center, thereby providing a continuous layer of precursor solution on the wafer prior to the rapid spin step. Id. at col. 3, lines 20-27. You et al. further discloses that in situations where the solution is dispensed beginning at the center of the wafer, the flow rate of solution can be progressively increased as the nozzle is moved towards the wafer edge. Id. at col. 12, lines 2-6.

In contrast to You et al., claim 8 recites relatively moving a in-process substrate or a dropping section, wherein ... rotational frequency w for said substrate is decreased and feed rate v for a liquid from said dropping section is increased so that the liquid dropped from said dropping section on said in-process substrate stays at dropped position in accordance with relative movement of said dropping section from the inner periphery of said in-process substrate toward the outer periphery. You et al. merely discloses increasing the flow rate of solution as the nozzle is moved towards the wafer edge and does not disclose at least rotational frequency w for said substrate is decreased and feed rate v for a liquid from said dropping section is increased, as claimed.

Furthermore, You et al. discloses that the it can be advantageous for the ratio of the solution flow rate to linear velocity of the wafer under the nozzle be held

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approximately constant. Id. at col. 11, lines 60-64. In at col. 11, lines 60-64. In You et al., as the nozzle moves from the center to the wafer edge, the linear velocity increases and this is compensated by increasing the flow rate. See id. at col. 11, lines 63-67. The increase in *linear velocity* is a result of the increase in radial distance from the center of the wafer rotating at *constant angular velocity*. Therefore, You et al. fails to disclose at least relatively moving a in-process substrate or a dropping section, wherein ... rotational frequency w for said substrate is decreased and feed rate v for a liquid from said dropping section is increased so that the liquid dropped from said dropping section on said in-process substrate stays at dropped position in accordance with relative movement of said dropping section from the inner periphery of said in-process substrate toward the outer periphery, as claimed.

Because You et al. fails to disclose each and every element of independent claim 1 of the Applicants' present invention, Applicants respectfully submit that the rejection of claim 1 under 35 U.S.C. § 102(e) is improper. Applicants request the Examiner withdraw the rejection and allow claim 1. Claims 2-4, 7-14, 16, 18, 20, 22, and 23 are also allowable at least in view of their dependency from allowable claim 1.

Rejection under 35 U.S.C. § 103(a)

The rejection of claims 5, 6, 15, and 17 is respectfully traversed, since a *prima facie* case of obviousness has not been made by the Examiner.

To establish a *prima facie* case of obviousness under 35 U.S.C. § 103(a), each of three requirements must be met. First, the reference or references, taken alone or combined, must teach or suggest each and every element recited in the claims. (*See* M.P.E.P. § 2143.03 (8th Ed. 2001).) Second, there must be some suggestion or

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motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references in a manner resulting in the claimed invention. Third, a reasonable expectation of success must exist. Moreover, each of these requirements must "be found in the prior art, and not be based on applicant's disclosure." M.P.E.P § 2143 (8th Ed. 2001).

As discussed earlier, You et al. fails to teach or suggest at least relatively moving a in-process substrate or a dropping section, wherein ... rotational frequency w for said substrate is decreased and feed rate v for a liquid from said dropping section is increased so that the liquid dropped from said dropping section on said in-process substrate stays at dropped position in accordance with relative movement of said dropping section from the inner periphery of said in-process substrate toward the outer periphery, as recited in claim 1.

Cited merely for applying vibrations to the solution, Akram et al. fails to cure the deficiencies of You et al. noted above.

Therefore, You et al. and Akram et al., either taken alone or in combination, do not teach or suggest at least relatively moving a in-process substrate or a dropping section, wherein ... rotational frequency w for said substrate is decreased and feed rate v for a liquid from said dropping section is increased so that the liquid dropped from said dropping section on said in-process substrate stays at dropped position in accordance with relative movement of said dropping section from the inner periphery of said in-process substrate toward the outer periphery, as claimed.

Further, Applicants respectfully disagree with the Examiner's allegations that it would have been within the scope of one of ordinary skill in the art to combine the

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teachings of You et al. and Akram et al. to enable formation of the solid layer. You et al. discloses dispensing of *solutions* containing thin film precursor and does not provide any motivation for formation of solid layer and further applying vibrations. Likewise, there is lack of any reasonable expectation of success from doing so.

To summarize, the Examiner has failed to make a *prima facie* case of obviousness at least because You et al. and Akram et al., either taken alone or in combination, do not teach each and every element of independent claim 1. Claims 5, 6, 15, and 17 depend from allowable claim 1. Therefore, Applicants respectfully request that the Examiner withdraw the rejection of claims 5, 6, 15, and 17 under 35 U.S.C. § 103(a), and the claims be allowed.

In view of the foregoing amendments and remarks, Applicants respectfully request the reconsideration and reexamination of this application and the timely allowance of the pending claims 1-18, 20, 22, and 23.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.

Dated: May 5, 2003

By: Robert J. Rolnicki Reg 24,014
Richard V. Burgujian
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APPENDIX TO AMENDMENT OF May 5, 2003

V rsion with Markings to Show Changes Made

IN THE CLAIMS:

Please 1, 2, and 4, as follows:

1. (Amended) A method of forming a solution film on an in-process substrate by using a dropping section for dropping liquid and an in-process substrate just under said dropping section, maintaining the liquid dropped from said dropping section on said in-process substrate, and relatively moving said in-process substrate or said dropping section, wherein

[relative movement between said in-process substrate and said dropping section means rotating said substrate and relatively moving said dropping section from an inner periphery of said substrate toward an outer periphery of said substrate;]

relative movement between said in-process substrate and said dropping section means rotating said substrate and relatively moving said dropping section from an inner periphery of said substrate toward an outer periphery of said substrate for spirally dropping said liquid on said in-process substrate;

rotational frequency w for said substrate is decreased and feed rate v for said liquid from said dropping section is increased so that [a centrifugal force applied to a] the liquid dropped from said dropping section on said in-process substrate stays at dropped position [film should not move said dropped solution film] in accordance with relative movement of said dropping section from the inner periphery of said in-process substrate toward the outer periphery [and feed rate v for said liquid from said dropping section is increased to form a solution film on said in-process substrate];

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otherwise,

[relative movement between said in-process substrate and said dropping section means rotating said substrate and relatively moving said dropping section from said outer periphery of said substrate toward said inner periphery of said substrate;]

relative movement between said in-process substrate and said dropping section means rotating said substrate and relatively moving said dropping section from an outer periphery of said substrate toward an inner periphery of said substrate for spirally dropping said liquid on said in-process substrate; and

rotational frequency w for said substrate is increased and feed rate v for said liquid from said dropping section is decreased so that [a centrifugal force applied to a] the liquid dropped from said dropping section on said in-process substrate stays at dropped position [solution film should not move said dropped solution film] in accordance with relative movement of said dropping section from the outer periphery of said in-process substrate toward the inner periphery [and feed rate v for said liquid from said dropping section is decreased to form a solution film on said in-process substrate].

2. (Amended) The film formation method according to claim 1, wherein when said dropping section is positioned to distance r from a center of said in-process substrate, feed rate v for said liquid from said dropping section is determined in accordance with rotational frequency w for said in-process substrate so that a constant value is maintained for the product of rotational frequency w and [by] feed rate v of said substrate support.

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4. (Amended) The film formation method according to claim 3 [1], wherein when said in-process substrate is a disk-shaped substrate with radius R (mm), said dropping section drops liquid at the outmost periphery of said substrate and a rotational frequency (rpm) for said substrate is smaller than the square root of 1,000,000/R.

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